

Coordinated response cuts time to treatment for deadly heart attacks

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When emergency medical services (EMS) and hospital providers worked together in a coordinated system, people suffering deadly heart attacks received life-saving treatment sooner, according to a new study in the American Heart Association's journal *Circulation*.

Often considered the most deadly type of [heart](#) attack, ST segment elevation myocardial infarction, or STEMI, happens when the blood supply to the heart is completely blocked. Quickly opening the blocked artery can restore normal blood flow, minimize heart damage and save lives.

National guidelines recommend the blockage be opened and [blood flow](#) restored within 90 minutes of the patient's first contact with emergency medical personnel for patients taken straight to a hospital that performs percutaneous coronary interventions (PCI). The goal is within 120 minutes for patients transferred from hospitals that do not perform PCI to those that do.

The American Heart Association Mission: Lifeline STEMI Systems Accelerator demonstration project created regional care systems aimed at increasing the number of people treated within the guideline recommendations. Carried out between July 2012 and December 2013, it is the largest effort to organize regional STEMI care ever attempted in the U.S. The demonstration, involved 484 hospitals and 1,253 EMS agencies in 16 regions in the country, treating 23,809 patients presenting with STEMI. There were 11,765 patients transported by EMS and 6,502

self-transported directly to PCI-capable hospitals, while 5,542 patients transferred from another facility.

During the time of the demonstration project, there was a modest, but significant increase in the proportion of patients meeting the guideline goals:

- 59 percent to 61 percent for all patients presenting directly to PCI-capable hospitals;
- 50 percent to 55 percent for those transported by EMS to PCI-capable hospitals; and
- 44 percent to 48 percent for those transferred from other facilities.

Among the 16 regions involved in the project, the five with greatest improvement increased the proportion of patients treated within guideline goals from 45 percent to 57 percent, with one region treating 75 percent within goal by the end of the project. Improvements among regions varied and overall increases were modest, in part, because some regions were slower than others to incorporate protocols and systematic changes within the relatively short time window of the intervention, Jollis said.

Historically, of the more than 250,000 people who have a STEMI each year, up to half are not treated within the recommended time.

The problem is a lack of coordination among those who care for STEMI patients before and after they get to the hospital, as well as diverse treatment plans among the 15,000 EMS agencies and 5,200 acute care hospitals in the U.S., said James G. Jollis, M.D., a study author and clinical professor of medicine at the University of North Carolina in Chapel Hill.

"Ideally, paramedics using a 12-lead EKG can recognize if an artery is blocked, diagnose STEMI in the field and route [patients](#) straight to specialized hospitals as they notify the hospital to activate the heart catheterization team immediately," Jollis said.

"This project shows it is possible to coordinate emergency cardiovascular systems and transform care in some of the largest U.S. cities, including New York, Houston and Atlanta," said Christopher B. Granger, M.D., study co-author and professor of medicine at Duke University in Durham, N.C. "This coordinated care between EMS and hospitals shortens emergency department times and correlates with lower mortality."

"In line with the fullest implementation of the project, we began to observe trends toward lower in-[hospital](#) mortality compared with national data toward the end of our measurement period," Jollis said. "The long-term goal is to have this protocol in place for every STEMI patient who suffers a heart attack in the community. Ultimately, death from [heart attack](#) should become a rare event."

Provided by American Heart Association

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